

Claims

I claim:

[Claim 1]

A recording medium which comprises a non-magnetic substrate and a magnetic layer formed thereon with three underlayers interposed between them, said magnetic layer being composed of a plurality of layers of Co-based alloy of hexagonal close-packed structure which are antiferromagnetically coupled to one another through a non-magnetic intermediate layer, said three underlayers including a first one of amorphous alloy, a second one of Ta, and a third one of Cr-based alloy of body-centered cubic structure.

[Claim 2]

A recording medium as in Claim 1, wherein the first underlayer is composed of Co as the principal component and at least one element selected from Zr, Ta, Nb, Ti, W, Mo, B, and Si in a total amount no less than 5 at% and no more than 60 at%.

[Claim 3]

A recording medium as in Claim 1, wherein the first underlayer is composed of Ni as the principal component and at least one element selected from Ta, Nb, Zr, Ti, and P in a total amount no less than 5 at% and no more than 60 at%.

[Claim 4]

A recording medium as in Claim 1, wherein the first

underlayer is composed of Cr as the principal component and at least one element selected from Ti, Zr, Ta, B, and Si in a total amount no less than 5 at% and no more than 60 at%.

[Claim 5]

A recording medium as in Claim 1, wherein the first underlayer is composed of at least one element selected from Nb, Zr, Ta, Mo, and Ti as the principal component and Si in an amount no less than 5 at% and no more than 50 at%.

[Claim 6]

A recording medium as in Claim 1, wherein the first underlayer is composed of Ni-Ta alloy.

[Claim 7]

A recording medium comprising a non-magnetic substrate and a magnetic layer formed thereon with three underlayers interposed between them, said magnetic layer being composed of a plurality of layers of Co-based alloy of hexagonal close-packed structure which are antiferromagnetically coupled to one another through a non-magnetic intermediate layer, said three underlayers including a first one of alloy of B2 structure, a second one of Ta, and a third one of Cr-based alloy of body-centered cubic structure.

[Claim 8]

A recording medium as in Claims 1 to 7, wherein the third underlayer of Cr-based alloy of body-centered cubic structure is composed of Cr-Ti-B alloy.

[Claim 9]

A recording as in Claims 1 to 8, wherein the magnetic layer substantially has a crystal form such that the (11·0) plane orients approximately parallel to the substrate surface.

[Claim 10]

A recording as in Claims 1 to 9, wherein the magnetic layer is composed of particles having an average particle diameter no larger than 10 nm measured in the direction approximately parallel to the substrate surface.

[Claim 11]

A recording as in Claims 1 to 10, wherein the magnetic layer has a coercive force (H_{cc}) measured in the circumferential direction and a coercive force (H_{cr}) measured in the radial direction such that the ratio of H_{cc}/H_{cr} is no smaller than 1.05.

[Claim 12]

A magnetic recording apparatus having a magnetic recording medium, a drive unit to drive the magnetic recording medium in the recording direction, a compound-type magnetic head including a recording magnetic head of electromagnetic induction type and a retrieving magnetic head of spin valve type, a means to move the magnetic head relative to the magnetic recording medium, and a means to process recording and retrieving signals generated by the magnetic head, wherein the magnetic recording medium is the longitudinal magnetic

recording medium as defined in any one of Claims 1 to 11.